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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,689	10/18/2005	Stephanic M. Whited	63126A	2018
35503 7590 12/03/2007 UNION CARBIDE CHEMICALS AND PLASTICS TECHNOLOGY CORPORATION P.O. BOX 1967 MIDLAND, MI 48641-1967			EXAMINER LU, C CAIXIA	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 12/03/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/553,689

Applicant(s)

WHITED ET AL.

Examiner

Caixia Lu

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10-15-07.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on October 31, 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jorgenson et al. (US 5,290,745) in view of Jorgenson (US 6,617,405).

Example 1 of Jorgensen '745 demonstrates gas phase ethylene polymerization process in a fluid bed reactor system in the presence of spray dried Ziegler catalyst prepared by (i) mixing magnesium and titanium tetrachloride in THF to provide a catalyst precursor solution, (ii) adding silica filler to the catalyst precursor solution to form a slurry, (iii) spray drying the catalyst precursor slurry in nitrogen gas at temperature ranging from 140 to 100 °C to provide discrete catalyst precursor particles, (iv) mixing the discrete catalyst precursor particles in mineral oil, and (v) partially activating the catalyst precursor particles with tri-n-hexylaluminum in mineral oil for ½ hour with tri-n-hexylaluminum/THF mole ratio of 0.2, sequentially, activating the partially

activated catalyst particles with diethylaluminum chloride for 1 hour with diethylaluminum chloride/THF mole ratio of 0.45 to provide an activated catalyst particles, and (vi) by adding additional amount of triethylaluminum and the partially activated catalyst composition to the reactor and conducting ethylene polymerization in the gas phase reactor. The Lewis acid activator to electron donor ratio of Example 1 is  $(0.2+0.45)/1$  which is not in the range of the instant claims. However, Jorgensen '745 also expressly teaches that the Lewis activator to electron donor ratio of 0.1:1 to 1:1 in order to partially activating the catalyst precursor (col. 6, lines 41-65). Therefore, it would have been obvious to conduct the partial activation by using Lewis activator to electron donor ratio anywhere in the range of 0.1:1 to 1:1 such as 0.1:1 to 0.3:1 since such is disclosed in Jorgensen '745 unless there is showing of criticality and unexpected results.

While Jorgensen '745 does not disclose conducting partial activating the catalyst precursor by employing one or more in-line static mixers, using an in-line static mixer to activate catalyst composition is known at the time of the invention and such is disclosed in Jorgensen '405 (col. 5, line 36 to col. 6, line 27). Using in-line static mixer prevents the activated catalyst from being exposed and thus maximizes the catalyst activity.

Thus, it would have been obvious to a skilled artisan at the time the invention was made to employ in-line static mixers containing reactor of Jorgensen '405 to conduct the polymerization of Jorgensen '745 by partially activating the catalyst precursor in the in-line static mixers with Lewis activator to electron donor ratio anywhere in the range of 0.1:1 to 1:1 such as 0.1:1 to 0.3:1 to

maximize catalyst activities and in the absence of any showing criticality and unexpected results.

While the cited prior art does not expressly disclose partially preactivating the catalyst precursor by contacting with diethylaluminum chloride followed by tri-n-hexyl aluminum, this sequence is considered functionally equivalent to the contacting the catalyst precursor with tri-n-hexyl aluminum followed by diethylaluminum chloride as shown above. It would have been obvious to replace functionally equivalent step with each other unless it is shown otherwise.

Any additional minor differences in the limitations of the dependent claims have also been considered, e.g., the viscosity of the partially activated catalyst slurry and contacting time for partial activation. However, those limitations are deemed to be result effective variables that one of ordinary skill in the art would be expected to manipulate to advantage based on a consideration of both economic and performance factors. Additionally, such limitations can be considered to have been simply known as conventional to the artisan practicing in the art at the time the invention was made and /or were common practices which were so well known in the art that they would have been taken for granted. MPEP 716.02(a) and 2144. If applicants believe that one or more limitations are critical to the invention, then applicants should limit the claims to reflect such critical limitations as well as indicate where in the specification such critical limitations are discussed and demonstrated.

The limitations of all claims have been considered and are deemed to be within the purview of the prior art.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 8-18 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Jorgenson et al. (US 6,187,866).

Example 5 of Jorgensen '866 demonstrate a polymerization process substantially identical to that of Jorgensen '745 as shown above by partially activating the catalyst precursor in the in-line static mixers with Lewis activator to electron donor ratio of (0.22+0.08) in Table III of col. 15. The teaching of Jorgensen '866 anticipates the instant claims.

6. Claims 6, 7, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jorgenson et al. (US 6,187,866) for the same rationale as cited in the rejections under 35 U.S.C. 103(a) as being unpatentable over Jorgenson et al. (US 5,290,745) in view of Jorgenson (US 6,617,405).

***Response to Arguments***

7. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (571) 272-1106. The examiner can normally be reached from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful and the matter is urgent, the examiner's supervisor, David Wu, can be reached at (571) 272-1114. The fax numbers for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.

A handwritten signature in black ink, appearing to read 'Caixia Lu', is positioned above the printed name and title.

Caixia Lu, Ph. D.  
Primary Examiner